



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :

G07F 17/32, 7/00, 7/08

A2

(11) International Publication Number:

WO 95/10824

(43) International Publication Date:

20 April 1995 (20.04.95)

(21) International Application Number: PCT/CA94/00553

(22) International Filing Date: 6 October 1994 (06.10.94)

(30) Priority Data:

132,542

6 October 1993 (06.10.93)

US

(60) Parent Application or Grant

(63) Related by Continuation

US

Filed on

08,132,542 (CIP)

6 October 1993 (06.10.93)

(71) Applicant (for all designated States except US): SKYGAME CORPORATION [CA/CA]; 8501 Bayview Avenue, Richmond Hill, Ontario L4B 3J7 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BELLFIELD, Einar [CA/CA]; 8501 Bayview Avenue, Richmond Hill, Ontario L4B 3J7 (CA). SMYTH, Brian, James [CA/CA]; 273 John Garland Boulevard, Rexdale, Ontario M9V 1N9 (CA).

(74) Agent: BERESKIN &amp; PARR; 40th floor, 40 King Street West, Toronto, Ontario M5Y 3Y2 (CA).

(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ).

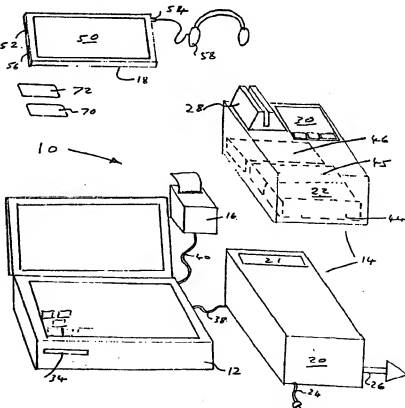
## Published

Without international search report and to be republished upon receipt of that report.

(54) Title: COMPUTER-BASED METHOD AND APPARATUS FOR PROVIDING AND FOR CHARGING FOR SERVICES

## (57) Abstract

An apparatus for providing fee-based entertainment includes an administration unit, and a plurality of user computer devices. The administration unit has a computer device or station including a token coupler for connecting to a token, e.g., a smart card, having data processing capability, for writing credit information to the token. Each user computer device has a token coupler for coupling to the token, for accepting credit information. Each user device is only activated and the programs thereon can only be used, once a user token has been inserted bearing appropriate credit information. The user will then be able to use various applications, optionally including gambling games. When use is terminated, any remaining credit balance can be written to the token, to be read by the administration unit, for credit to the user. Encryption can be provided for encrypting credit information and applications stored on each user computer device.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

**Title: COMPUTER-BASED METHOD AND APPARATUS  
FOR PROVIDING AND FOR CHARGING FOR SERVICES**

**FIELD OF THE INVENTION**

This invention relates to a computer-based method and apparatus for providing services, such as gambling and entertainment services, to a user and for charging the user.

**BACKGROUND OF THE INVENTION**

5           Currently, there are numerous situations where people are gathered together and desirous of some form of entertainment or diversion, but no suitable form of entertainment or the like is available. This commonly arises in various modes of transport. For example, airline flights, particularly international airline flights, can be of many hours  
10           duration. Many people find it difficult to concentrate on anything too demanding, due to ambient noise levels and the poor quality of air in an aircraft cabin.

          On longer flights, it is common to provide aircraft with screens for showing motion picture films. While this can provide  
15           entertainment, it has its own disadvantages. Commonly, a few screens are located along the lengths of an aircraft cabin, with each screen being visible by a large number of passengers. This necessarily requires all passengers to watch the film at the same time. Showing the film usually has to be timed around other activities on long flight, such as the serving of meals, drinks  
20           or snacks. This can often pressure cabin staff to serve meals and to collect food trays in an extremely short period of time. In any event, many passengers either are not too interested in movies, or may simply dislike the particular film chosen by the airline company.

          There are also currently known a number of computing  
25           devices providing for various forms of interactive entertainment. Currently, there are such well-known products as "Mario Brothers" and the like. These will often provide a cartoon-like stimulation of a certain scene with various characters that can be manipulated by the user. The

- 2 -

user then has a task of navigating one or more characters to some desired end. Usually, a number of different levels of difficulty can be selected. In addition to the visual effect, provided on the screen of a personal computer, or other monitor connected to a computing device, it is  
5 common to provide a suitable sound effect.

However, in most of these known systems, the only satisfaction gained by the user is in meeting the challenges presented by the system. Some games or entertainment of this sort will enable the user to score points, but again the user simply gains satisfaction in accumulating  
10 a certain number of points, with the system possibly providing for comparison with previous scores of others.

In many societies, there are also many well-known forms of gambling available. These, typically, rely upon some random or chance element, which can be provided, for example by the use of cards, dice or  
15 the mechanism of a ball and wheel in roulette. It has been known to provide computer software packages which simulate known gambling games. A problem with such known software-based gambling games is that they provide little or no security, where the game is to be played for money or some other tokens of substantial value. Many software-based  
20 games will provide the gaming mechanism, while relying entirely upon the user to administer and monitor any money or funds changing hands between the participants.

### SUMMARY OF THE PRESENT INVENTION

The inventors therefore realize that it would be desirable  
25 to incorporate gambling games and other entertainment into an interactive computer-based system, while providing full security and enabling full control of any funds changing hands. More particularly, it is the applicants' suggestion that a computing device be provided, for each passenger who is to use the system, which can, in effect, be credited with

- 3 -

whatever amount of funds the passenger wishes to use.

In accordance with the present invention, there is provided a computer-based interactive apparatus, for enabling services to be provided to a user and charged to the user, the system comprising: an  
5 administration unit including an administration computer device, which includes a token coupler for connecting to a user token having data processing capability, for writing credit information to the token; and a plurality of user computer devices, each having an interface means for interfacing with a user, and a token coupler for coupling to a user token,  
10 for accepting credit information from the user token and for writing a remaining balance to the user token, wherein each user computer device can only be activated and applications stored thereon used, after insertion of a user token including a credit balance.

In the present specification, including the claims, reference to a "token" is a reference to a smart card or similar device  
15 providing the same capabilities. A smart card is a card with a microprocessor embedded therein, which provides for some data processing and storage capabilities. It enables a card to store information electronically, which information can be accessed and updated, if correct security codes are used. As is known, proprietary codes or coupler keys  
20 must be used to gain access to a smart card. Additionally, in the present invention, it is preferred to use encryption technology, to encrypt data on a smart card with appropriate keys, which must be known if this data is to be decrypted.

The passenger will then be free to utilize these funds in any way desired. The computing device will be programmed with a number of different gambling games and/or other forms of entertainment. The gambling games would, it is anticipated, run in accordance with accepted rules for each game. For the entertainment  
30 aspect, it is possible that a user could simply be charged on a time basis.

- 4 -

For games such as Mario Brothers, a user, instead of just being awarded points, could be awarded cash prizes for different point levels, in effect converting it into a gambling-type of game.

5 The provision of a high level of security and complete control of a transfer of funds enables a gambling game to offer a high level of cash prizes, which is attractive to many people. Further, by effecting all payments through credit cards of the passengers, there need be no concern of handling any large quantities of cash, with the possibilities of theft or fraud.

10 It will further be appreciated that many aircraft fly in international air space, where it is expected that domestic or local laws on gambling will not apply. It is therefore expected that in many cases, a variety of gambling games with substantial cash prizes could be offered.

15 A further facet of the system is that, unlike other forms of entertainment such as movies, the gambling or entertainment can in effect, be provided on an individual basis. Each passenger will choose whether or not they are interested in receiving a computing device to enable them to play the games etc. Further, for each passenger, it is entirely up to that passenger to what extent they use the device and when  
20 they use it. For example, a passenger may use it for part of a flight, spending the rest of the time in other more usual ways, such as eating, resting or reading.

#### **BRIEF DESCRIPTION OF THE DRAWING FIGURES**

25 For a better understanding of the present invention, and to show more clearly how it may be carried in effect, reference will now be made, by way of example, to the accompanying drawings, which show preferred embodiments of the present invention and in which:

Figure 1 shows a perspective view of an apparatus in accordance with a first embodiment of the present invention;

- 5 -

Figure 2 shows a perspective view of a second embodiment of an apparatus in accordance with the present invention;

Figures 3a and 3b show plan and front views respectively of a third embodiment of an apparatus in accordance with the present invention; and

Figure 4 shows a front, exploded view of the third embodiment of the apparatus.

#### DESCRIPTION OF PREFERRED EMBODIMENTS

Referring first to Figure 1, an apparatus in accordance with the present invention is generally indicated by the reference 10. The apparatus 10 comprises an administration station or computer 12, a credit authorization unit 14, a printer 16, and a plurality of individual computing devices 18, of which just one is shown. The computer devices 18 would usually all be identical. The administration station 12, credit authorization unit 14 and printer 16 collectively comprises an administration unit, which will be located at one location, for operation by, for example, one of the cabin staff in an aircraft, or other authorized operator, as detailed below.

The credit authorization unit is a standard product manufactured by International Verifact Inc. It comprises two components, namely a base unit 20, and a removable hand held unit 22. The base unit 20 has a cradle for receiving the hand held unit and, as indicated at 21, provides appropriate connections to that unit.

As indicated at 24, the base unit would be connected to a power supply, and, as indicated at 26, would be connected to data transmission lines, for transmitting data to an appropriate financial institution.

The hand held unit 22 includes a magnetic stripe card reader 28, for reading a credit card. Unit 22 further includes a numeric key

- 6 -

pad 30, and a number of components indicated in outline in the figure, namely a microprocessor 44, data storage memory 45 and communications hardware 46.

5 The base unit 20 also includes suitable processing devices, data storage and communications hardware.

The administration station or computer 12 is a secure, portable computer, incorporating security technology of Toven Technology Inc., as detailed in published international application WO92/14209, the contents of which are hereby incorporated by reference.

10 This unit has a central processor (80486), 4 MB RAM memory, storage media (fixed disk drive of 80 MB capacity), a video display (9.5 inches with active colour), 85 key keyboard, security system microprocessor, an encryption processor, a smart card reader 34, a port connected to the credit authorization unit 14 by a data transmission line 38 and a battery power supply (not visible). Alternatively, a suitable power supply line can be

15 provided, for connection into aircraft power supply circuits or otherwise.

As noted, the administration station or computer 12 is connected by the data transmission line 38 to the base unit 20. It is also connected by a line 40 to the printer 16. The printer 16 is thus controlled

20 by the station 12, for purposes detailed below. Preferably, the printer is a compact thermal transfer unit.

Each individual computer device 18 provides a game station for an individual user. It will have a central processor (80486), memory (4 MB), storage media (80 MB fixed disk drive), security system

25 microprocessor, encryption processor. It also includes a video display 50, smart card reader 52, port 54 for an audio output, and a port 56 for program loading. Each unit or device 18 has a battery as a power source (not shown) which would be recharged, in known manner. Headphones 58 can be connected to the audio port 54, as shown, for a user to enjoy an

30 audio output associated with a particular program or game.



- 7 -

The video display 50 incorporates a touch screen, i.e. a screen that is sensitive to touch, and capable of detecting which area or location of the screen is touched. Different applications will create areas on the screen to be touched by a user. The touch screen can detect which areas are touched, to operate the application accordingly. This is instead of a conventional keyboard, and touching screen has the same effect as touching a key of the conventional keyboard.

To ensure integrity and security, both the administration station 12 and each individual computing device 18 will need to be activated by an appropriate smart card. The smart card is a card having the size and shape of a conventional credit card, which has embedded in it a microprocessor, some storage capability, and connections, for providing electrical connection to a smart card reader. Here, Figure 1 shows a smart card 70 for the user or administrator running the administration unit 12, and a smart card 72 for use by an individual user of a computer device 18. As detailed below, the games on the individual device computer device 18, all data on the administration station 12, and credit information stored on smart cards 70, 72 are encrypted. Smart cards conventionally have built in security features to prevent tampering and modification. Thus, for a smart card to transfer data with a smart card reader, the smart card reader must have a coupler key that will be recognized by the smart card.

Additionally, in accordance with the present invention, all data on each smart card 70, 72, including financial data and encryption keys is encrypted using an access key. This data can thus only be read by a computer device 18 which has already been pre-programmed with the corresponding access key.

Each computer device 18 is controlled initially and set up by use of the administration of the system or apparatus.

The security system identified in published international application WO92/14209 relies upon three main encryption keys, namely

- 8 -

an "access key", a "system administrator key", and a "user key". For the present application, two system administrator keys would be provided which would be the responsibility of a central administrator, responsible for administering the system, the second administrator key effectively replaces the user key. Each system comprises an administration unit and an appropriate number of computing devices or stations 18. The system administrator's function would be to load appropriate games and applications onto each device 18, each encrypted with the system administrator key. One system administrator key is used to encrypt the operating system of each device 18 (and as detailed below possibly some applications), while the other is used to encrypt applications. Thus, the system administrator keys are, in the present context, keys used to encrypt all applications and programs on a given set of computer devices 18.

The system administrator keys would be stored on the smart card 70 carried by an administrator of the system 18, and encrypted by the access key.

Each user of computer device 18 would be given an individual user smart card 72. As detailed below, this smart card would have encrypted on it the dollar amount credited to that user, and the system administrator keys, which would be common to all associated devices 18.

The access key also provides an additional level of security, as it ensures that the system administrator keys are encrypted on all applicable smart cards. Thus, as detailed in the above-mentioned published international application, the system administrator card 70 would bear both system administrator keys, encrypted by the access key. When inserted in a particular computer device 18, and using the access key, previously downloaded into the device or station 18, the system administrator keys would be decrypted.

This will then enable various maintenance functions to

- 9 -

be carried out, such as loading of new programs, or updating and altering existing programs or applications. Further, it could enable the system administrator to disable some applications. It could well be that, for example, in some jurisdictions, it will be permissible for passengers or users to play or use certain games or applications, but not others. In such a case, when passing through those jurisdictions, the system administrator can disable the appropriate applications, so that use of the devices 18 will be lawful. Also, parents may wish to purchase credit for a child to use purely entertainment applications; in such cases the gambling applications or games could be disabled.

The system administrator card will not permit any of the applications or games to be played or used, except for test purposes. More particularly, it will not be possible for the system administrator to play any gambling game and obtain any sort of a dollar credit or the equivalent on the system administrator card. Gambling games and other applications can only be used when the second administrator key is present on a user smart card. The system administrator user cards each have an identifier, which actuates each device 18 accordingly. The system administrator card 70 actuates it for maintenance functions, while a user card 72 actuates each device 18 to enable the games etc. to be used.

It is anticipated that the above arrangement of encryption keys can deal with any users failing to return their individual smart cards. Computer-minded users may wish to keep one for examination, while other users may wish to keep one as a souvenir. Other cards may simply be lost or damaged.

If a single card is not returned, this need not be a concern. While it may contain a credit balance, this is encrypted and cannot be tampered with.

If there is concern that there is any breach of security, e.g. through a whole batch of user cards 72 being mislaid, then the devices 18

- 10 -

can be programmed with a new access key, by the system administrator.

Thus, the system administrator could insert the smart card 70 into the administration unit 12. This would be instructed to create a new access key, randomly, or by use of available data such as time, date, flight number etc. This new access key would be stored within the unit 12, and the system administrator key re-encrypted with the new access key and stored on the system administrator card 70, in an appropriate location, replacing the former system administrator key encrypted with the previous access key. Temporarily, the access key will be recorded on the system administrator card.

The system administrator can then download the new access key into each device 18. It would be stored in encrypted form. After the new access key has been written to all devices 18. It would be deleted from the system administrator card.

The use of two system administrator keys enables the basic operating system, and possibly some applications to be encrypted with one key, with other applications encrypted by the second administrator key. This could enable each device 18 to be partially activated by a system administrator. This could enable some "rolling loop" type of display to be run, explaining to a user what is available, without a user card 72 being present. At the same time, most of the applications, particularly those involving gambling, would be disabled.

To activate the full range of applications, it will be necessary to insert a user card 72, with the second administrator key. This will then be decrypted with the access key and used to activate all the applications for use by the user, as detailed below.

For many purposes, where it is not desired that each device 18 can present, for example, a rolling loop display without a user card being present, then a single system administrator key can be used. This key would be used to encrypt all the contents of the hard disk of the

- 11 -

devices 18, and is preferred for a simple implementation of the invention.

At the start of a flight, passengers will be canvassed, to see who is interested in using the games etc. available on devices 18. Each passenger interested would be asked to pay for the amount of usage  
5 desired, by way of credit card. A passenger's credit card would be taken and run through the magnetic stripe card reader 28. The appropriate dollar amount would be entered. In known manner, there will be an interchange with the corresponding financial institution to obtain authorization; possibly, for a number of passengers, one could enter a  
10 series of credit card transactions and transmit all of these simultaneously.

For example, the hand held unit 22 could be used to process a number of credit card requests from a number of passengers as they enter the aircraft. The passengers will be told that they would be handed a unit in due course, once the flight was in progress. When all  
15 data had been collected, the hand held unit 22 would be returned to the base unit 20, which would cause a single transmission to be made to the appropriate financial institutions. With the proper authorization obtained, this information would be transmitted to the administration station, and through the administration unit 12 to the printer 16. The  
20 printer 16 would print out appropriate credit card receipts for the passengers.

Sequentially, the administrator would, for each request, take a user's smart card and insert it into the administration station 12. There, the user card would have the appropriate dollar amount written to  
25 is, encrypted with the access key.

After being given the credit card receipt for signature, in known manner, the user would be handed a device 18 and a corresponding user card 72, with the appropriate dollar amount and the system administrator key both encrypted with the access key.

30 The user will then insert the user card into the device 18.

- 12 -

The device 18 will read and decrypt the system administrator key, and then the encrypted dollar amount. The user will then be provided with a rolling loop display (if not already activated), including instructions on how to use the device 18, and information on programs and applications available for use. The user will also be advised of the dollar amount credited to the machine for his or her use.

For each application, the user will be advised of the cost of using that application. For example, some applications may be purely entertainment, and charged on the time basis or otherwise. Other gambling games, could operate in known manner. Thus, for example, for the game Black Jack, representations of cards could be provided, and the user could operate the game by touching appropriate sections of the screen, including sections permitting the user to select the amount to be wagered etc.

Any money spent on using applications, or on gambling, would be deducted from the total dollar balance originally credited. The balance on the user smart card is updated on a per transaction basis. When the user is finished, they would be led through an appropriate exit sequence, and any dollar amount remaining would be re-encrypted onto the user card 72 with the access key.

At the end of the flight, or otherwise, the user would return the device 18 to the system administrator. The system administrator would take the user card 72 and reinsert it into the administration station, to determine what dollar amount is available. An appropriate credit will then be made to the user's credit card. It will be appreciated that when dealing with purely credit card transactions, one can provide gambling games which provide a possibility of large pay outs, without having to be concerned with the difficulty of handling a large volume of cash.

The games or applications as available on the devices 18

- 13 -

could be varied and could include children's games, virtual reality games, information services and advertising. As noted, headphones 58 could be provided, to provide an added dimension to each game.

5 Where an user uses all of the original credit balance on the card, the user can simply purchase further credit which would be credited to the card again.

Each device 18 will include a colour "active matrix" display which will offer 640 x 480 resolution and 256 colours. This will be based on touch technology, eliminating the need for a keyboard. The user  
10 will see colour graphics and symbols, and be prompted or instructed by both visual and audio means to touch an appropriate area of the screen.

It will be appreciated that, where a single access key is used, then any user smart card 72 can be used with any one of the devices 18. In an aircraft situation, each user will be instructed that a card 72, with  
15 an encrypted credit amount, is of considerable value and should be guarded safely. Nonetheless, there is the possibility that someone else could misappropriate a card 72 and use it in another device 18. There may also be other situations where the devices 18 and cards 70 are distributed much more widely and held for long periods of time, leading to greater  
20 possibilities of fraud etc.

For such cases, it is possible that each device 18 and its associated user card 72 could have an unique access key. Thus, to use any particular user device or station 18, it will be necessary to have the sole user card 72 having the corresponding access key. This would provide yet  
25 another level of security.

Referring to Figure 2, a second embodiment of the computer device is shown, indicated at 80. As before, a number of these would be provided, replacing the devices 18. While it is preferred, as shown for devices 18, to use a touch screen interface for the user, it is  
30 possible that, for some applications, a keyboard will be desirable and

- 14 -

necessary. Here, the standard 85 key keyboard has been replaced by a 8 key  
keyboard 82, to provide a simpler interface, for use by passengers and user  
who may not be familiar with conventional keyboards. Each key would  
have associated with it a number of mechanical switches, to provide for  
5 redundancy and durability.

Four keys can be provided, to move a cursor on the  
screen. The other keys can be for functions such as select, bet, play and  
quit, for gambling games.

For some users, it may be desirable to provide a keyboard.  
10 Further, many users may prefer the tactile sensation involved in  
punching keys, rather than simply touching the screen.

A screen 84 is connected by a hinge to the main body of  
the device 80.

Reference will now be made to Figures 3 and 4, which  
15 show a third embodiment of the apparatus. This embodiment has many  
features in common with the first two embodiments, and the description  
above is applicable to common elements. Here, the apparatus is generally  
indicated by the reference 100. It is provided with a touch sensitive screen  
102.

20 The apparatus 100 is intended as a stand-alone unit,  
which would enable a user to both run applications or games, as well as  
perform administrative functions, such as obtaining credit.

To this end, it includes a smart card reader/writer 104 and  
a credit card reader 106. As shown in Figure 4, the smart card  
25 reader/writer is part of a security module 105.

Referring to Figure 4, the unit or apparatus has an  
external case 108 with top and bottom halves 108a, 108b, the bottom case  
half 108b providing slots for credit and smart cards. A main board 110 has  
the credit card reader 106 and the security module 105 mounted below it,  
30 together with a hard drive 112, providing a storage media in known



- 15 -

manner.

Above the main board 110, there is a touch screen 114 and a thin film transistor screen 116 associated with it.

5 As indicated schematically in Figure 3a, there are a number of communication ports 118. These are shown schematically, and practically, could be formed flush with the rear of the case 108. These could include a number of functions, including a connection to, for example, an aircraft power distribution system, for providing various standard DC levels. A number of serial ports could be provided, including  
10 one for credit card communication. This would enable communication with appropriate financial institutions, for obtaining credit card authorization. A serial port could be provided for connection to a printer, such as printer 16 and to headphones 58, as in the earlier embodiments.

15 In an aircraft or other environment, it is preferred that this third embodiment be provided with an appropriate power supply and be connected into a network, enabling at least communication for the credit card reader 106 for financial authorization. For this purpose, the unit would include an internal modem. Then, a user can operate the unit entirely independently of an administrator. The user would be provided  
20 with a unit and a smart card, again indicated at 70.

Initially, a user would insert a credit card containing no available credit into the apparatus or computing device. This would then call for the insertion of a credit card through the credit card reader 106, to enable credit authorization to be obtained. The user would input through  
25 commands to the touch screen, a request for an appropriate level of credit. Once credit authorization is obtained, this credit balance will be read to the smart card 70, and a corresponding debit is made against the user's credit card.

30 As before, the user would then be given the option of running various games or applications, including gambling games. A

- 16 -

credit balance on the card 70 would be depleted sequentially as games are run, and any wins on gambling games would be written or credited to the card 70.

5       The card 70 has the advantage that it provides security for  
the device 100. If the user wishes to leave the device 100 for any period of  
time, she or he could do so secure in the knowledge that no one else can  
gain access to any remaining credit balance. Thus, a user could have a  
significant credit balance on the card 70, which could be removed and  
taken with the user. No other person could then run games or  
10       applications.

      Although this may not be of particular importance in an  
aircraft environment, it could be of greater importance where the device is  
used in various other environments, e.g. in a hotel or resort. The smart  
card then becomes an independent, credit-bearing token, which can be  
15       used for other functions, other than simply operating the device 100.

      While the system has been described for use in,  
primarily, an aircraft, it will be appreciated that the system can be used in a  
wide variety of different environments and locations. In its broadest  
sense, it enables control of a number of devices or game stations, by a  
20       single central administrator. Each device 18 can be battery-powered, and  
requires no connection or communication with the base unit 12. As such,  
there is no requirement for the users to be located in the same place, or  
using their devices in the same time frame. For example, the system  
could be used by a hotel, where guests could effectively purchase a credit  
25       balance and obtain one of the devices or game stations 18, on checking in.  
These can then be used, as and when desired, by each guest in his or her  
own room. The system administrator unit could then be run from the  
reception area in the hotel, and as before, enable full control over credit  
and debit balances and the like. Alternatively, where the third  
30       embodiment is used, a network with various access points would be

- 17 -

provided to enable the user to obtain credit card authorization etc.

Nonetheless, it is anticipated that the system will prove particularly attractive to passengers in various vehicles, for whom the range of entertainment or diversion is necessarily restricted. It could thus be used on trains, ferries, buses and the like.

5

- 18 -

**CLAIMS:**

1. A computer-based interactive apparatus, for enabling services to be provided to a user and charged to the user, the apparatus comprising:  
5                   an administration unit including an administration computer device, which includes a token coupler for connecting to a user token having data processing capability, for writing credit information to the token; and  
10                   a plurality of user computer devices, each having an interface means for interfacing with a user, and a token coupler for coupling to a user token, for accepting credit information from the user token and for writing a remaining balance to the user token, wherein each user computer device can only be activated and applications stored thereon used, after insertion of a user token including a credit balance.
- 15   2. An apparatus as claimed in claim 1, in combination with a user token for storing credit information.
3. An apparatus as claimed in claim 2, wherein each user computer device stores an access key, and wherein a credit balance on the user token is encrypted with the access key, and wherein each user  
20   computer device includes a security module, for storing the access key, and including encryption means for decrypting the credit balance from the user token and for re-encrypting a credit balance with the access key for writing to the user token.
4. An apparatus as claimed in claim 3, wherein each  
25   application on each computer device is encrypted with a system administrator key, and wherein each user token stores thereon the system

- 19 -

administrator key, encrypted with the access key, and wherein the encryption means of the security module, after coupling of the user token to a user computer device, decrypts the system administrator key with the access key, to enable each application to be accessed.

- 5        5.        An apparatus as claimed in claim 4, wherein the access key for all the user computer devices is the same, and wherein the system includes a plurality of user tokens, each of which has stored thereon the system administrator key encrypted with the access key, to enable usage of any user token with any user computer device.
- 10       6.        An apparatus as claimed in claim 1, wherein the administration unit includes a credit authorization unit, which comprises a memory, processing means and communication hardware, a key pad and a card reader, for reading user credit cards, the credit authorization unit including means enabling the communication hardware to
- 15       communicate with financial institutions.
7.        An apparatus as claimed in claim 6, which includes a printer connected to the administration unit, for printing credit card receipts.
- 20       8.        An apparatus as claimed in claim 3, in combination with a system administrator card, which has a system administrator key stored thereon, encrypted with the access key, wherein each user computer device recognises both the system administrator token and each user token, each user computer device only enabling maintenance and test functions to be carried out when the system administrator token is
- 25       present, and enabling applications stored thereon to be used fully when a user token is present.

- 20 -

9. An apparatus as claimed in claim 8, which includes first and second system administrator keys, wherein, for each user computer device, an operating system and first applications are encrypted with the first system administrator key, and second applications are encrypted with the second administrator key, wherein the first and second administrator keys are both encrypted with the access key on the system administrator token and each user token, whereby a system administrator token can be used to activate just the operating system and the first applications of each user computer device.
10. An apparatus as claimed in claim 1, wherein the operating system and applications on each user computer device are encrypted with a system administrator key, which is stored on the user token, whereby each user computer device can only be activated after the system administrator key has been read from the user token and used to decrypt the operating system and the applications.
11. A computer-based interactive apparatus for enabling services to be provided to a user and charged to a user, the apparatus comprising: a computing device comprising a central processor, memory means, storage media means and a video display, all connected to one another; a token coupler for connecting to a user token having data processing capability, for writing credit information to the token, the token coupler being connected to the computing device; and a card reader means for reading a user credit card, connected to the computing device.
12. An apparatus as claimed in claim 11, wherein each computer device stores an access key and wherein a credit balance on the user token is encrypted with the access key, and wherein the computer

- 21 -

device includes a security module for storing the access key and including encryption means for decrypting the credit card balance from the user token and for re-encrypting a credit balance with the access key for writing to the user token.

5      13.            An apparatus as claimed in claim 11 or 12, which includes communication ports, for communication with at least one of: a power supply; a printer; a communication network for communication to a financial institution for credit card authorization.

10      14.            An apparatus as claimed in claim 11, 12 or 13, wherein the video display means of the computer device comprises a touch screen, and wherein all user commands are input through the touch screen.

15      15.            A method of providing interactive computer-based services and for charging for the services, the method comprising:

15            (a) providing a user with a computer device including a token coupler for coupling to a user token, the computer device only being activated upon insertion of a user token including a credit balance;

            (b) inserting a user token with a credit balance into the token coupler;

20            (c) reading the credit balance from the user token, to activate the computer device; and

            (d) using the computer device.

16.            A method as claimed in claim 15, which includes, after step (d), the additional steps of:

25            (e) writing a remaining credit balance to the user token; and

            (f) removing the token bearing the remaining credit

- 22 -

balance from the token coupler.

17. A method as claimed in claim 16, which includes, prior to step (a), the additional step (i) after obtaining appropriate funds from the user, charging a user token with a desired credit balance at an administration unit including an administration computer device, which includes a token coupler for connecting to the user token, and wherein the method includes, after step (f), the additional step (g) inserting the user token into the administration unit, to read the remaining credit balance, and providing payment to the user for any such credit balance.

18. A method as claimed in claim 17, wherein step (i) includes reading a user's credit card with a credit card reader, obtaining authorization for a desired credit balance, and passing that credit balance to the administration unit, for writing to the user token, and wherein the step (g) includes crediting a user credit account with an appropriate credit balance.

19. A method as claimed in claim 17, wherein data including the credit balance on the user token is encrypted with an access key, and wherein the computer device has the access key stored therein, and wherein, in step (c) the encrypted credit balance is read from the user token and decrypted with the access key, to obtain the credit balance on the user token.

20. A method as claimed in claim 15, wherein the computer device includes an operating system and applications encrypted with a system administrator key and the system administrator key is stored on the user token, and wherein step (c) additionally includes reading the system administrator key from user token, to decrypt the operating system



- 23 -

and applications on the computer device.

21. A method as claimed in claim 19, wherein the computer device includes an operating system and applications encrypted with the system administrator key, and wherein the system administrator key encrypted with the access key is stored on the user token and wherein the step (c) additionally includes reading the encrypted system administrator key from the user token and decrypting the system administrator key with the access key, and subsequent decryption of the operating system and the applications.

22. A method as claimed in claim 17, which includes a system administrator token, wherein step (c) additionally includes reading the user token to determine the presence of a user token, and wherein the method includes the additional steps of:

(h) inserting the system administrator token into the token coupler, reading data thereon, and determining the presence of the system administrator token;

(i) permitting maintenance and test functions to be carried out on the computer device.

23. A method as claimed in claim 21, which includes a system administrator token, wherein step (c) additionally includes reading the user token to determine the presence of a user token, and wherein the method includes the additional steps of:

(h) inserting the system administrator token into the token coupler, reading data thereon, and determining the presence of the system administrator token;

(i) permitting maintenance and test functions to be carried out on the computer device.

- 24 -

24. A method as claimed in claim 23, wherein the operating system and first applications on the computer device are encrypted with a first system administrator key, and wherein second applications are encrypted with a second administrator key, and wherein, when the system administrator token is coupled to the token coupler of the computer device, just the first applications can be activated.
- 5

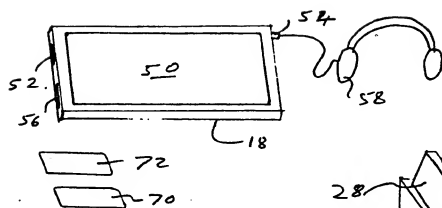


FIGURE 1

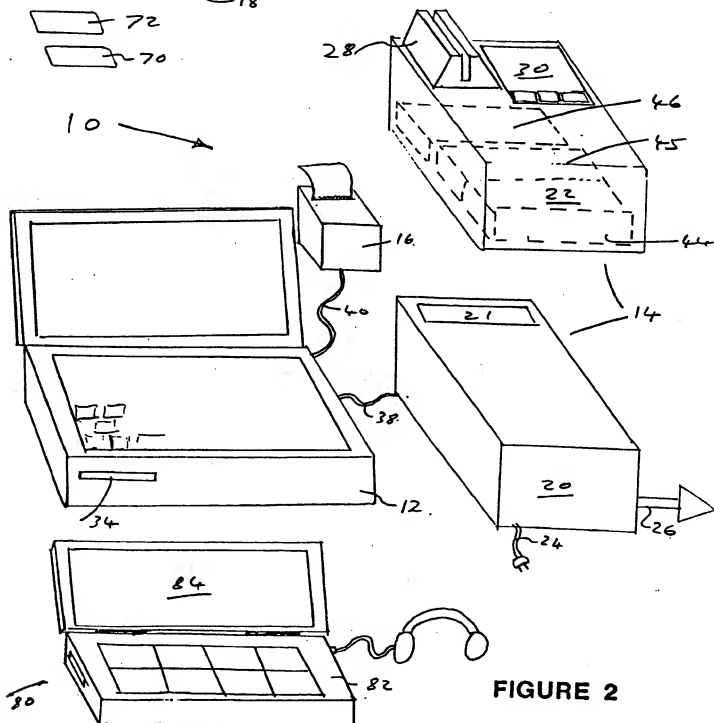
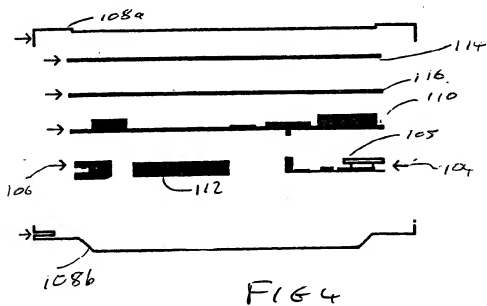
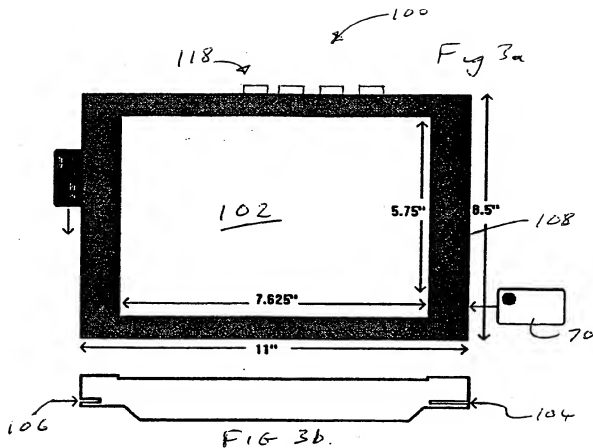


FIGURE 2



(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
20 April 1995 (20.04.1995)

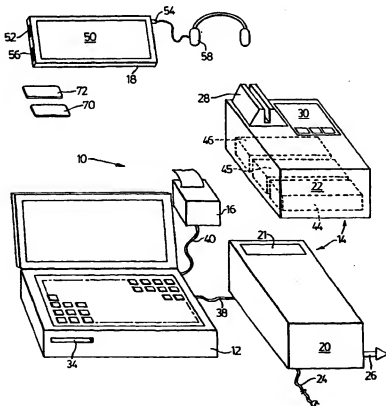
PCT

(10) International Publication Number  
**WO 95/10824 A3**

- (51) International Patent Classification\*: G07F 17/32. (71) Applicant (for all designated States except US):  
7/00, 7/08 SKYGAME CORPORATION [CA/CA]; 8501 Bayview  
Avenue, Richmond Hill, Ontario L4B 3J7 (CA).
- (21) International Application Number: PCT/CA94/00553 (72) Inventors; and  
(75) Inventors/Applicants (for US only): BELLFIELD,  
Finar [CA/CA]; 8501 Bayview Avenue, Richmond Hill,  
Ontario L4B 3J7 (CA). SMYTH, Brian, James [CA/CA];  
273 John Garland Boulevard, Rexdale, Ontario M9V 1N9  
(CA).
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 132,542 6 October 1993 (06.10.1993) US
- (63) Related by continuation (CON) or continuation-in-part  
(CIP) to earlier application: US 08,132,542 (CIP)  
Filed on 6 October 1993 (06.10.1993)
- (81) Designated States (national): AM, AT, AU, BB, BG, BR,  
BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU,  
JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG,  
MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK,  
TJ, TT, UA, US, UZ, VN.

[Continued on next page]

(54) Title: COMPUTER-BASED METHOD AND APPARATUS FOR PROVIDING AND FOR CHARGING FOR SERVICES



(57) Abstract: An apparatus for providing fee-based entertainment includes an administration unit, and a plurality of user computer devices. The administration unit has a computer device or station including a token coupler for connecting to a token, e.g. a smart card, having data processing capability, for writing credit information to the token. Each user computer device has a token coupler for coupling to the token, for accepting credit information. Each user device is only activated and the programs thereon can only be used, once a user token has been inserted bearing appropriate credit information. The user will then be able to use various applications, optionally including gambling games. When use is terminated, any remaining credit balance can be written to the token, to be read by the administration unit, for credit to the user. Encryption can be provided for encrypting credit information and applications stored on each user computer device.

WO 95/10824 A3



(84) **Designated States (regional):** ARIPO patent (KE, MW, SD, SZ), European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

**(15) Information about Correction:**

**Previous Correction:**

see PCT Gazette No. 21/1995 of 18 May 1995, Section II

**Published:**

— With international search report.

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**(88) Date of publication of the international search report:**

3 May 2001

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 94/00553

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 6 G07F17/32 G07F7/00 G07F7/08

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP,A,0 360 613 (BALLY MANUFACTURING CORPORATION) 28 March 1990 see the whole document ---	1,2, 15-17 3-5, 8-10, 19-24
X A	EP,A,0 555 683 (PAYTRON) 18 August 1993 see abstract; claims; figures see column 3, line 9 - column 6, line 43 ---	1,2, 15-17, 22,23 3-5,8-10
A A	WO,A,91 09369 (J. LUCERO) 27 June 1991 see abstract; claims; figures ---	1,6,11, 13-18
A	WO,A,88 01818 (C. WRIGHT) 10 March 1988 see abstract; claims; figures 8-12 ---	1-24
	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "A" document member of the same patent family

Date of the actual completion of the international search

29 March 1995

Date of mailing of the international search report

26.04.95

Name and mailing address of the ISA  
 European Patent Office, P.B. 5818 Patentaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

David, J

# INTERNATIONAL SEARCH REPORT

Li .onal Application No

PCT/CA 94/00553

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>EP,A,0 307 925 (GTECH CORPORATION) 22  March 1989  -----</p>	



# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. Appl. No.

PCT/CA 94/00553

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0360613	28-03-90	US-A-	5179517
		AT-T-	116754
		AU-B-	613484
		AU-A-	3450489
		DE-D-	68920391
			12-01-93
			15-01-95
			01-08-91
			29-03-90
			16-02-95
EP-A-0555683	18-08-93	NONE	
WO-A-9109369	27-06-91	US-A-	5038022
		AU-B-	640446
		AU-A-	7078091
		EP-A-	0506873
		NZ-A-	236562
			06-08-91
			26-08-93
			18-07-91
			07-10-92
			23-12-93
WO-A-8801818	10-03-88	US-A-	4802218
		AT-T-	116778
		AU-B-	605443
		AU-A-	7961287
		CA-A-	1320578
		CA-A-	1326911
		CA-A-	1296809
		DE-D-	3750958
		EP-A-	0294397
		EP-A-	0619563
		EP-A-	0619564
		EP-A-	0619565
		FI-B-	92781
		JP-T-	1500863
		US-A-	4864618
		US-A-	4900904
		US-A-	4900903
			31-01-89
			15-01-95
			10-01-91
			24-03-88
			20-07-93
			08-02-94
			03-03-92
			16-02-95
			14-12-88
			12-10-94
			12-10-94
			12-10-94
			15-09-94
			23-03-89
			05-09-89
			13-02-90
			13-02-90
EP-A-0307925	22-03-89	US-A-	4764666
		AU-A-	2218688
		CA-A-	1294052
		DE-A-	3877868
		JP-A-	1222374
		US-A-	4882473
			16-08-88
			23-03-89
			07-01-92
			11-03-93
			05-09-89
			21-11-89

**THIS PAGE BLANK (USPTO)**

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☒ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**

**THIS PAGE BLANK (USPTO)**